Biospheric Sciences Branch Highlights
for May – June 2005

**** NASA Public Service Medal awarded to Oleg Doubovik of the Biospheric Sciences Branch**.

This award is presented to anyone who was not a Government employee when the service was performed. The award recognizes exceptional contributions to the mission of NASA.

Oleg Doubovik (Code 614.4) was presented with a NASA Public Service Medal at the 2005 NASA Honor Awards ceremony on May 17th "in recognition of your innovative inversion of radiative transfer equation leading to highly accurate retrievals from ground-based, airborne, and satellite remote sensing systems."

**** LEDAPS project releases Landsat-based North America surface reflectance dataset**

The LEDAPS project (Landsat Ecosystem Disturbance Adaptive Processing System) has released a Landsat-based North America surface reflectance dataset. The dataset includes some 2200 TM and ETM+ scenes, calibrated and atmospherically corrected to surface reflectance using an adaptation of the MODIS MODAPS processing system. The original data include the NASA/Earth Satellite Corporation GeoCover orthorectified product, which includes separate coverage for 1990 (TM) and 2000 (ETM+). The LEDAPS project has also released a "Beta" forest disturbance product for the Mid-Atlantic region, derived from the decadal Landsat surface reflectance imagery. By the end of the year, a wall-to-wall assessment of forest disturbance for North America will be released, in support of the North American Carbon Program (NACP). These data can be downloaded from the LEDAPS web site:
http://ledaps.nascom.nasa.gov/ledaps/ledaps_NorthAmerica.html

**** 20-year global data collection documenting the Earth's land surface state and climate has been released**

A 20-year global data collection, 5 years in the making, documenting the Earth's land surface state and climate has been released on-line and on a four-volume DVD set. Data production was an effort within the International Satellite Land Surface Climatology Project (ISLSCP) and was led within the Biospheric Sciences Branch by Drs James Collatz and Forrest Hall. The data collection, a large international effort by the scientific community, contains 50 co-registered data sets, some beginning in 1981 with a common overlap period, 1986-1995; Included are land surface vegetation, near-surface

meteorology, precipitation, hydrology, river runoff, topography, radiation budget and clouds, land-ocean-atmosphere carbon exchange, soils data, snow, sea-ice and sea surface temperatures. Resolutions range from 3-hourly to monthly, and from 25 to 100 km. The data collection is focused on key energy, water and carbon cycling science questions and was designed and generated by the ISLSCP community, consisting of scientists from 36 different national and international organizations. The data collection is already finding wide use and is available on-line at: http://islscp2.sesda.com/ISLSCP2_1/html_pages/islscp2_home.html.

**** 2nd Science Team Meeting for the NPP Project**

The NPP Science Team held its 2nd team meeting on May 9-10 in Annapolis. More than 130 individuals from GSFC, the Integrated Program Office (IPO), NOAA, industry and universities participated. After brief plenary sessions on both days, the participants joined sensor- and science-discipline based splinter sessions that focused on identifying and reducing potential risks to NPP's goal of providing continuity of EOS-like data records. NASA Program Management (D. Wickland) participated throughout, and complimented NPP's Project Scientist (J. Gleason, Code 613.3) on the success of the meeting as well as his leadership of the Science Office over the past year. Jim helped the Project reach a significant milestone when HQ approved the implementation plan for the distributed product evaluation element (Science Data Segment), an important NASA contribution to the overall NPP/NPOESS mission architecture.

**** 2nd CEOS/WGCV Land Product Validation Workshop on Albedo Products**

Approximately 30 albedo scientists met for 1.5 days during the European Geophysical Union (EGU) in Vienna to develop a strategy for coordinated evaluation of recent satellite albedo products. The meeting coincided with two related articles in the journal Science which claim global albedo is steadily decreasing. Presentations from most meeting participants highlighted the advances and rigor now common in albedo measurements, scaling and analysis. The group developed plans for a retrospective analysis of satellite products based on field data collected at three unique sites in 2003. Further, they began developing plans to hold a joint field campaign in 2006 where, with pooled resources, they could directly address fundamental questions in measurement and scaling designs and protocols. They will seek support for the latter activity from CEOS. The Workshop was co-chaired by Jeff Morisette (Code 614.5) and Jeff Privette (Code 614.4) from GSFC, as well as Crystal Schaaf (BU) and Fred Baret (France).

**** Betsy Middleton (Code 614.4) lead author on White Paper**

Dr. Betsy Middleton was the lead author on a White Paper by Code 614 scientists submitted on 5/13/05 to the National Academy of Science's Decadal Survey Request for Information (RFI) for ideas to develop an integrated US Earth science and environmental research program. The concept paper is entitled "GEOCarb Explorer: A Geosynchronous GEO Hyperspectral Mission Providing Continental-Scale Carbon Cycle Ecosystem Observations", by E.M. Middleton (Code 614.4), A. Mannino (Code 614.7), R.G. Knox (Code 614.4), K.F. Huemmrich (Code 614.4), and F.G. Hall, (Code 614.4), 12 pp.

**** Dr. Levine working with middle and high school teachers who are part of the FIMS (Fellowship in Math and Science) program**

Dr. Elissa Levine is working with groups of middle and high school teachers who are part of the FIMS (Fellowship in Math and Science) program to train the teachers in GLOBE protocols and have them identify available digital and audio content for Earth Science. The science content they identify will be used as a part of a project entitled "Touch the Earth" which is a book of tactile versions of MODIS imagery that is connected via hardware to a computer to provide digital and audio information describing components of the imagery. This work is being done in collaboration with the National Federation of the Blind (NFB) and Somatic Digital, and will not only be useful for blind students, but can be used for any student who does not primarily rely on sight for learning. The first group of teachers was trained in June, and 2 more groups will be participating in July and August this summer. Teachers who work with this project will continue collaboration with Dr. Levine throughout the 2005-2006 school year.

**** Publication of new study describing the measurement of vegetation photosynthetic efficiency from MODIS accepted for publication**

A publication describing a new study describing the measurement of vegetation photosynthetic efficiency from MODIS involving Biospheric Sciences Branch members K.F. Huemmrich, F.G. Hall and E.M. Middleton and their Canadian collaborators (G.G. Drolet, T.A. Black, A.G. Barr and H.A. Margolis) has been accepted for publication in Remote Sensing of Environment (pending minor editorial changes). The investigators showed that MODIS visible bands can successfully measure reflectance variations caused by changes in canopy photosynthetic efficiency. Photosynthetic rate is critical in computing land-atmosphere carbon, water exchanges. The study was funded by a NASA grant. The site is a deciduous broadleaf forest in Southern Canada, a part of the Canada FluxNet project headed by Hank Margolis.